

2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

RE: Evaluation of Safety-Kleen Systems, Inc., Lexington. facility's status under the RCRA Info Corrective Action Environmental Indicator Event Code CA750
EPA ID Number SCD 077 995 488

FROM: Johnny Tapia, PE *J.T.*
Operations Engineering Section
Waste Management Division
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THRU: Shelly Sherrit, Manager *S. Sherrit*
Operations Engineering Section
Waste Management Division
Bureau of Land and Waste Management

John Litton, PE, Division Director *JL*
Waste Management Division
Bureau of Land and Waste Management

TO: Safety-Kleen Systems, Inc. - Lexington Project File
EPA ID # SCD 077 995 488
Central File Room # 051759

DATE: September 10, 2003

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Safety-Kleen Systems, Inc. – Lexington facility's status in relation to the Migration of Contaminated Groundwater Under Control (CA750) corrective action event code defined in the Resource Conservation and Recovery Act Information System (RCRA Info).

An evaluation of Safety-Kleen Systems, Inc. – Lexington's status in relation to the current Human Exposures Under Control (CA725) corrective action event code has already been finalized under separate cover.

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Concurrence by the Operations Engineering Section Manager and the Division of Waste Management Director is required prior to entering this event code into RCRA Info. Your concurrence with the interpretation provided in the following paragraphs and the subsequent recommendation is satisfied by dating and signing at the appropriate location within Attachment I.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for the Safety-Kleen Systems, Inc. – Lexington facility with regard to the CA 750 corrective action event code. The previous evaluation was complete on August 31, 1998 (memorandum from Wilkie to Litton). Based on the information available at the time, a status code of “NO” was entered into RCRA Info.

III. FACILITY SUMMARY

Safety-Kleen Systems, Inc. (SKS) operates a solvent reclamation facility and processes other organic chemicals that are either returned to the customers or blended and sent to other facilities for energy recovery. Safety-Kleen Systems, Inc.’s facility is situated 10 miles west of Columbia S.C. in Lexington County at 130-A Frontage Road, Lexington, S.C. SKS renewed the Hazardous waste Permit for treatment and storage, which has an effective date of October 30, 1998. The maximum volume of hazardous waste storage in containers is 319,004 gallons and 535,000 gallons in tanks. Container storage areas 4, 12, and 13 have been clean closed. The maximum volume of hazardous waste treatment in the FRS Vat unit is 35,000 gallons per day. This unit is currently closed.

There are six SWMUs and AOCs identified in Appendix A of the Safety - Kleen Systems, Inc. Permit, for which a RCRA facility Investigation (RFI) must be completed. These units are: SWMUs 1, 13, 14, 15 & AOCs A & B. A Phase 1 and a Phase 2 RFI have been conducted to date. A Phase 2 RFI report dated May 31, 2002 revised October 25, 2002 was conditionally approved on November 25, 2002. An Interim Measures Workplan (revised December 2002) has been approved and is presently being implemented.

IV. CONCLUSION FOR CA750

Name and ID No.	Location (City or Town)	Date of Latest EI Memo	CA 750 Decision
Safety-Kleen Systems, Inc. SCD 077 995 488	Lexington, SC	September 10, 2003	“YE”

SUMMARY OF FOLLOW-UP ACTIONS

The *Migration of Contaminated Groundwater Under Control* EI determination will be updated as necessary upon the discovery of new or contrary information.

Attachment I. CA750: Migration of Contaminated Groundwater Under Control

cc: Kim Tappa, RCRA Hydrogeology I Section
Lewis Bedenbaugh, Central Midlands EQC
Narindar Kumar, EPA Region 4

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Interim Final 2/5/99

Facility Name: Safety-Kleen Systems, Inc.
Facility Address: 130-A Frontage Road, Lexington, SC 29073
Facility EPA ID #: SCD 077 995 488

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below,
☐ If no - re-evaluate existing data, or
☐ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Is **groundwater** known or reasonably suspected to be “**contaminated**”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

- ☒ If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.
- ☐ If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”
- ☐ If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

A chlorinated solvent groundwater plume extends offsite to the northwest of the Main Process building, apparently related to past drycleaning solvent recycling operations. Below is a table listing the most recent detections of the constituents of concern before the Interim Measure Workplan was implemented (with the exception of TMW-16D).

Well	Date Sampled	Tetrachloroethylene	Cis-1,2-Dichloroethylene	Trichloroethylene
MCL (ug/l)		5	70	5
MW-2D	12/02	140	380	23
TMW-1D	12/02	30		
TMW-3D	02/03	6.9		
TMW-4D	12/02	12		
TMW-6D	12/02	36		
TMW-11D	02/03	30		
TMW-16D	06/03	35		

Note: Blank areas indicate either no detection, or detection below the Maximum Contaminant Level (MCL). All results are in ug/l.

References:

RCRA Facility Investigation Report, May 31, 2002, revised October 25, 2002

Interim Measures Field Testing Report, January 24, 2003

August 5, 2003 correspondence, *First Performance Groundwater Monitoring Results, - June 2003*, Schoepke to Tapia

March 7, 2003 correspondence, *Supplemental Groundwater Monitoring Data – February 2003 results*, Schoepke to Tapia

¹

“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

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3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within an “existing area of contaminated groundwater”² as defined by the monitoring locations designated at the time of this determination?
- ☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”²).
- ☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”²) - skip to #8 and enter “NO” status code, after providing an explanation.
- ☐ If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

Safety-Kleen Systems, Inc. – Lexington has implemented the interim measure of in-situ chemical oxidation using potassium permanganate in order to remediate the main part of the dissolved chlorinated solvent plume. *First Performance Groundwater Monitoring Results*, dated August 5, 2003, indicate a decrease in concentrations in the constituents of concern. Additional assessment monitoring is scheduled for up to 36 months following the initial permanganate injection conducted in March/April 2003. Downgradient offsite wells TMW-5D, TMW-8D and TMW-9D continue to show no detections of volatile organic compounds (VOCs), as does the well on the eastern edge of the plume, TMW-10D. In addition, in December 2001 nine temporary wells were installed west and north of the Safety-Kleen Systems, Inc. – Lexington property and groundwater samples were collected at multiple depths in the water table aquifer (*Hollis Road Additional RI data summary*, Fletcher Group, January 2002). No VOCs were detected in any of the samples.

² “existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater remains within this area, and that the further migration of “contaminated” groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____✓ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The nearest surface water body to the facility is Twelvemile Creek, which is located ½ mile to the northwest. Results from offsite groundwater monitoring wells have not warranted sampling in Twelvemile Creek.

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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration⁷ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter “IN” status code in #8.

Rationale and Reference(s):

³

As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment levels, as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s):

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"
- ☒ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."
- ☐ If no - enter "NO" status code in #8.
- ☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

The Interim Measures Workplan (dated October 11, 2002, revised December 4, 2002) states that performance monitoring will be conducted at 3 months, 6 months, 12 months, 18 months, 24 months and 36 months after injection of the permanganate in March/April 2003 at the following 14 wells: TMW-1D, TMW-2D, TMW-3D, TMW-4D, TMW-5D, TMW-6D, TMW-7D, TMW-8D, TMW-9D, TMW-10D, TMW-11D, TMW-12D, TMW-13D and MW-2D. As stated in the RFI Report, additional monitoring at these wells will be evaluated based on the progress of the interim measure.

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Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Safety-Kleen Systems, Inc. - Lexington facility, EPA ID # SCD 077 995 44488, located at 130-A Frontage Road, Lexington, South Carolina. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

☐ NO - Unacceptable migration of contaminated groundwater is observed or expected.

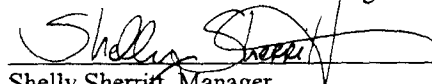
☐ IN - More information is needed to make a determination.

Completed by


Johnny Tapia, PE
Operations Engineering Section
Bureau of Land and Waste Management

Date: 9-10-03

Supervisor


Shelly Sherritt, Manager
Operations Engineering Section
Bureau of Land and Waste Management

Date: 9-10-03

Locations where References may be found:

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